WHAT IS CLAIMED IS:

1. A method of providing synchronous transport of packets between asynchronous network nodes, each asynchronous network node having a local clock and transmitting and receiving packets to and from the asynchronous network according to an asynchronous network media access protocol, comprising:

designating as a master node an asynchronous network node capable of transmitting and receiving packets on the asynchronous network;

designating as a slave node each non-master asynchronous network node which desires to synchronously transport packets across the asynchronous network as a slave node;

synchronizing a master node clock of the master node with a slave node clock of each slave node;

determining at the master node, a best arrival time for the reception by the master node of each particular packet transmitted by each particular slave node;

communicating from the master node to the slave nodes best arrival times for packets transmitted from slave nodes to the master node;

determining at each slave node best packet assembly times for packets to be transmitted by the particular slave node to the master node in the future in order for the packets to be received by the master node at future master clock referenced best arrival times;

continuously correcting each slave node clock compared with the master node clock to smooth slave clock error to an average of zero compared with the master clock as a reference in response to a message from the master node;

preparing packets for transmission at slave nodes according to determined future best packet assembly time information; and

transmitting packets at slave nodes according to the determined future best packet assembly time information.

2. The method of claim 1, wherein the step of designating a master node is determined by assessing an ability of an asynchronous node to directly access synchronous network timing information.

3. The method of claim 2, wherein an asynchronous network node with direct access to synchronous network timing information is designated the master node.

4. The method of claim 1, wherein synchronizing further includes:

sending timestamp report messages in pairs from the master node to slave nodes at periodic intervals by:

sending a first timestamp report message from the master node to the slave nodes;

recording master timestamp information at the master node at a defined time during transmission of the first timestamp report message of a pair corresponding to the transmission of the first timestamp report message of a pair; and

sending a second timestamp report message from the master node to the slave nodes which contains the master timestamp information;

receiving timestamp report messages in pairs by the slave nodes from the master node by:

recording a slave timestamp at the slave nodes at a fixed time during reception of each timestamp report message to provide a recorded timestamp of the first timestamp report message at the slave nodes;

comparing the recorded timestamp of the first timestamp report message of each pair at the particular slave node with the master timestamp information from within the second timestamp report message of the same pair to determine a master clock offset from the slave clock of the slave nodes; and

adjusting the slave clock of the slave nodes to be synchronized with the master clock based on the master clock offset.

5. The method of claim 1, wherein continuously correcting includes:

using a continuing series of calculated master clock offsets from the slave clock to calculate a correction factor for the slave clock, the additional calculated master clock offsets being determined from additional received timestamp report message pairs following the synchronization step; and

tracking error of the slave clock as compared with the master clock and modifying slave clock frequency to smooth the error and create a continuously corrected slave clock with an average error of zero as compared to the master clock.

6. The method of claim 1, wherein determining the best arrival times for receptions by the master node of particular packets from each slave node includes:

recording a time for a current master-connected synchronous network transmission opportunity when the master node is connected to a synchronous network;

subtracting from the current master-connected synchronous network transmission opportunity a value representing the time required for the master node to receive, process and forward packets from slave nodes to the synchronous network to yield a best arrival time; and

correlating current master-connected synchronous network transmission opportunities and their associated best arrival times to traffic flows corresponding to packet transmissions of the slave nodes.

7. The method of claim 1, wherein communicating from the master node to the slave nodes best arrival times for packets transmitted from slave nodes includes sending timestamp report messages intended for reception by slave nodes which include best arrival times with corresponding and slave node identification to allow slave nodes to determine which information is applicable to them.

8. The method of claim 1, wherein determining at each slave node the best arrival packet assembly times for packets to be transmitted by the particular slave node to the master node in the future in order for the packets to be received by the master node at future best arrival times includes:

subtracting from the best arrival time applicable to each given slave node, a value that represents a slave node packet assembly delay plus a maximum expected asynchronous network access delay plus an expected asynchronous network transmission delay to yield an intermediate time result;

adding to the intermediate time result a value representing an integer multiple of an expected periodicity of transmissions of packets by the slave node, wherein a chosen integer is a smallest possible value that yields a future time; and

repetitively adding to the future time, the expected periodicity of the transmissions of packets by the slave node to calculate a series of best packet assembly times for packets to be transmitted by the particular slave node to the master node in the future.

9. The method of claim 1, wherein preparing packets for transmission at slave nodes according to the determined future best packet assembly time information includes assembling a set of continuously generated data into a series of single packets so that a time from a collecting of last data to be assembled for

a given packet corresponds to a best packet assembly time from the series of best packet assembly times.

10. The method of Claim 1, further comprising employing a deterministic collision resolution protocol to further reduce asynchronous network access delay jitter, wherein asynchronous network nodes obtain a fixed sequence of backoff values to be used during collision resolution rather than employing a random process for selecting backoff values.

11. In an asynchronous communications network having a master node and one or more slave nodes, a method of synchronizing a master node clock of the master node with a slave node clock of each slave node, comprising:

sending timestamp report messages in pairs from the master node to slave nodes at periodic intervals by:

sending a first timestamp report message from the master node to the slave nodes;

recording master timestamp information at the master node at a defined time during transmission of the first timestamp report message of a pair corresponding to the transmission of the first timestamp report message of a pair; and

sending a second timestamp report message from the master node to the slave nodes which contains the master timestamp information; and

receiving timestamp report messages in pairs by the slave nodes from the master node by:

recording a slave timestamp at the slave nodes at a fixed time during reception of each timestamp report message to provide a recorded timestamp of the first timestamp report message at the slave nodes;

comparing the recorded timestamp of the first timestamp report message of each pair at the particular slave node with the

master timestamp information from within the second timestamp report message of the same pair to determine a master clock offset from the slave clock of the slave nodes; and

adjusting the slave clock of the slave nodes to be synchronized with the master clock based on the master clock offset.